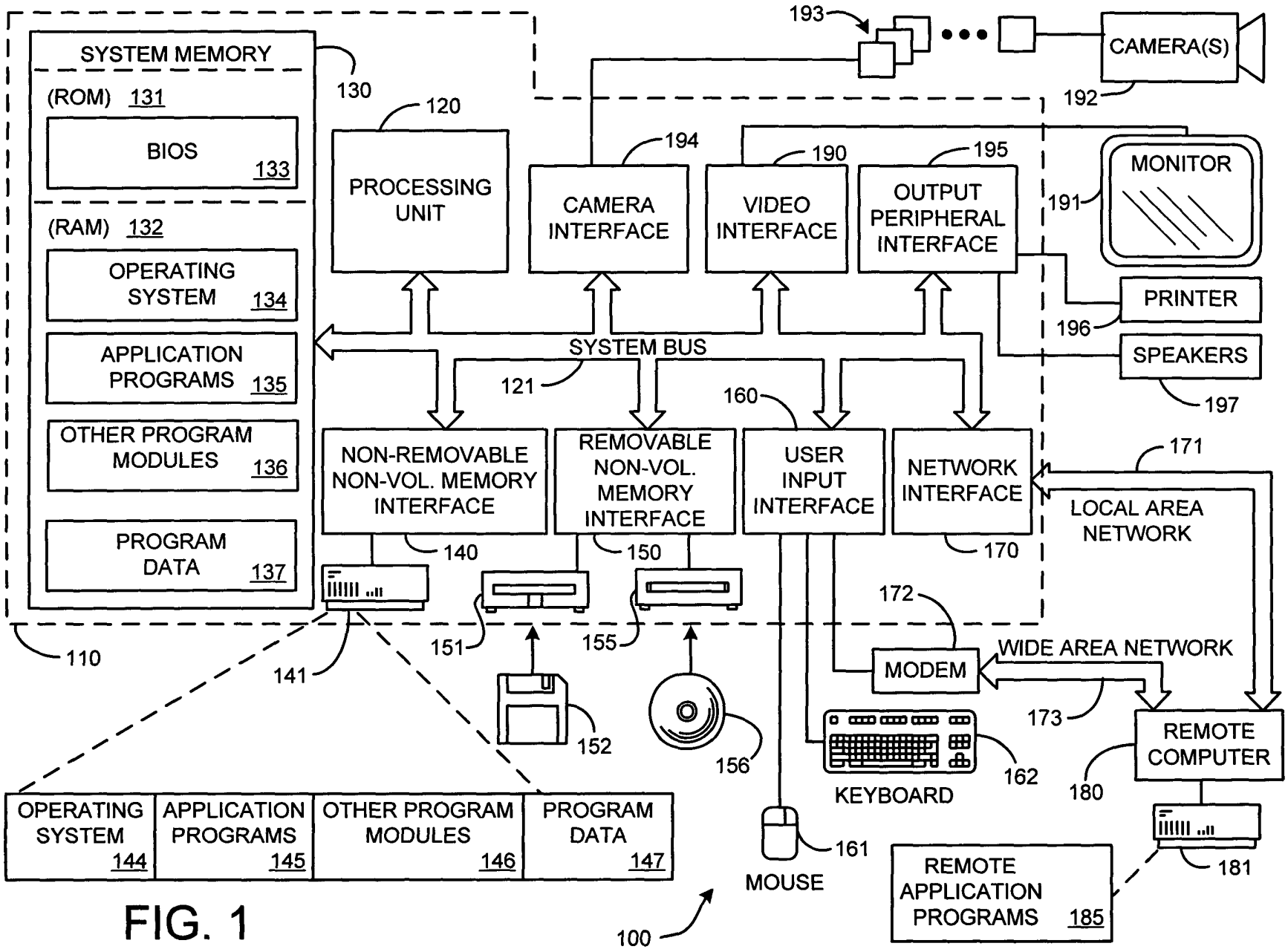
SYSTEM MEMORY
130
(ROM) 131
BIOS 133
(RAM) 132
OPERATING SYSTEM 134
APPLICATION PROGRAMS 135
OTHER PROGRAM MODULES 136
PROGRAM DATA 137
120
PROCESSING UNIT
193
CAMERA(S)
192
194
CAMERA INTERFACE
190
VIDEO INTERFACE
195
OUTPUT PERIPHERAL INTERFACE
MONITOR
191
PRINTER
196
SPEAKERS
197
SYSTEM BUS
121
160
NON-REMOVABLE NON-VOL. MEMORY INTERFACE
REMOVABLE NON-VOL. MEMORY INTERFACE
USER INPUT INTERFACE
NETWORK INTERFACE
171
LOCAL AREA NETWORK
140
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151
155
172
MODEM
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173
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REMOTE COMPUTER
180
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MOUSE
181
OPERATING SYSTEM 144
APPLICATION PROGRAMS 145
OTHER PROGRAM MODULES 146
PROGRAM DATA 147
REMOTE APPLICATION PROGRAMS 185
100

FIG. 1

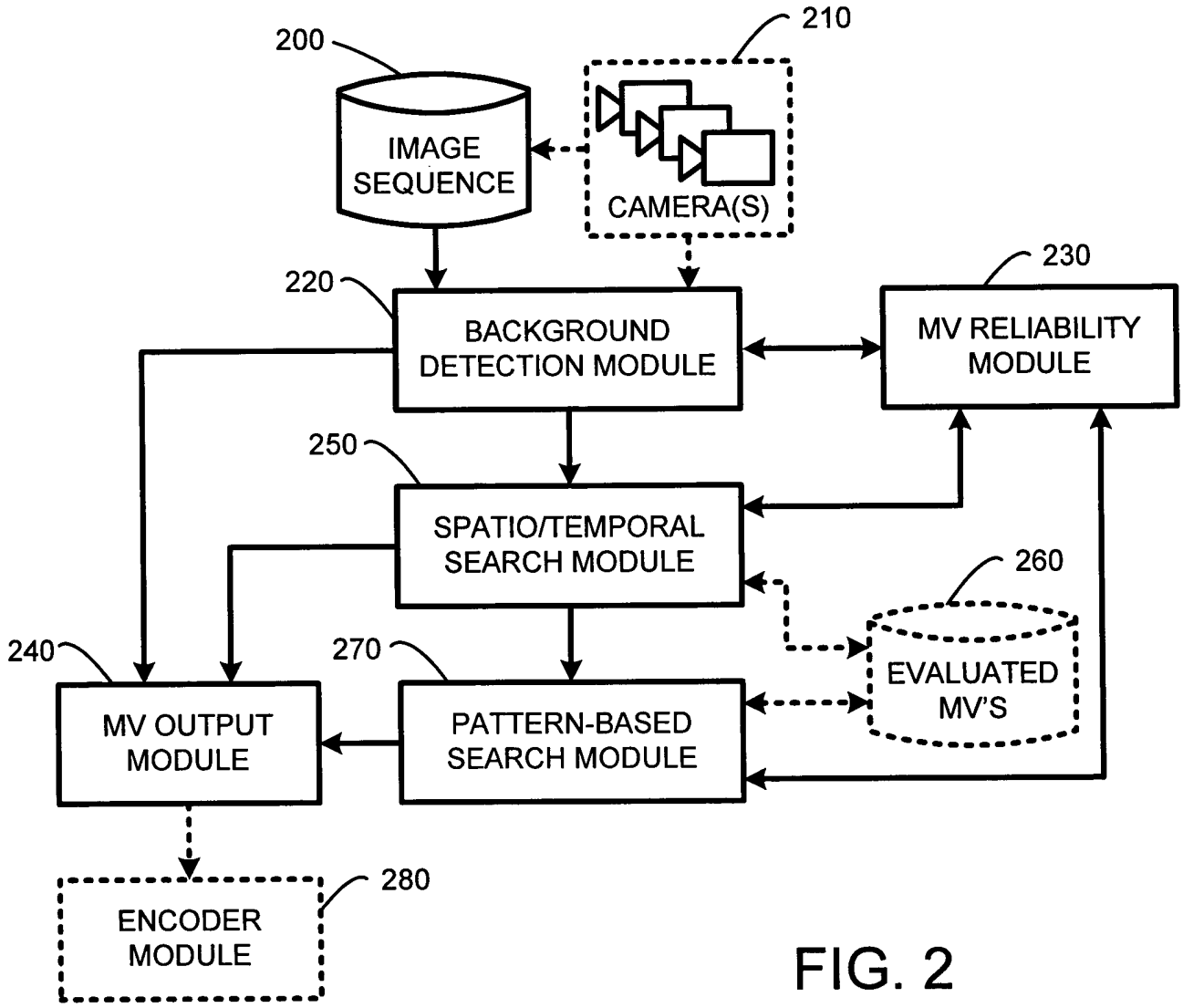

200
210
IMAGE SEQUENCE
CAMERA(S)
220
BACKGROUND DETECTION MODULE
230
MV RELIABILITY MODULE
250
SPATIO/TEMPORAL SEARCH MODULE
260
EVALUATED MV'S
240
270
MV OUTPUT MODULE
PATTERN-BASED SEARCH MODULE
ENCODER MODULE
280

FIG. 2

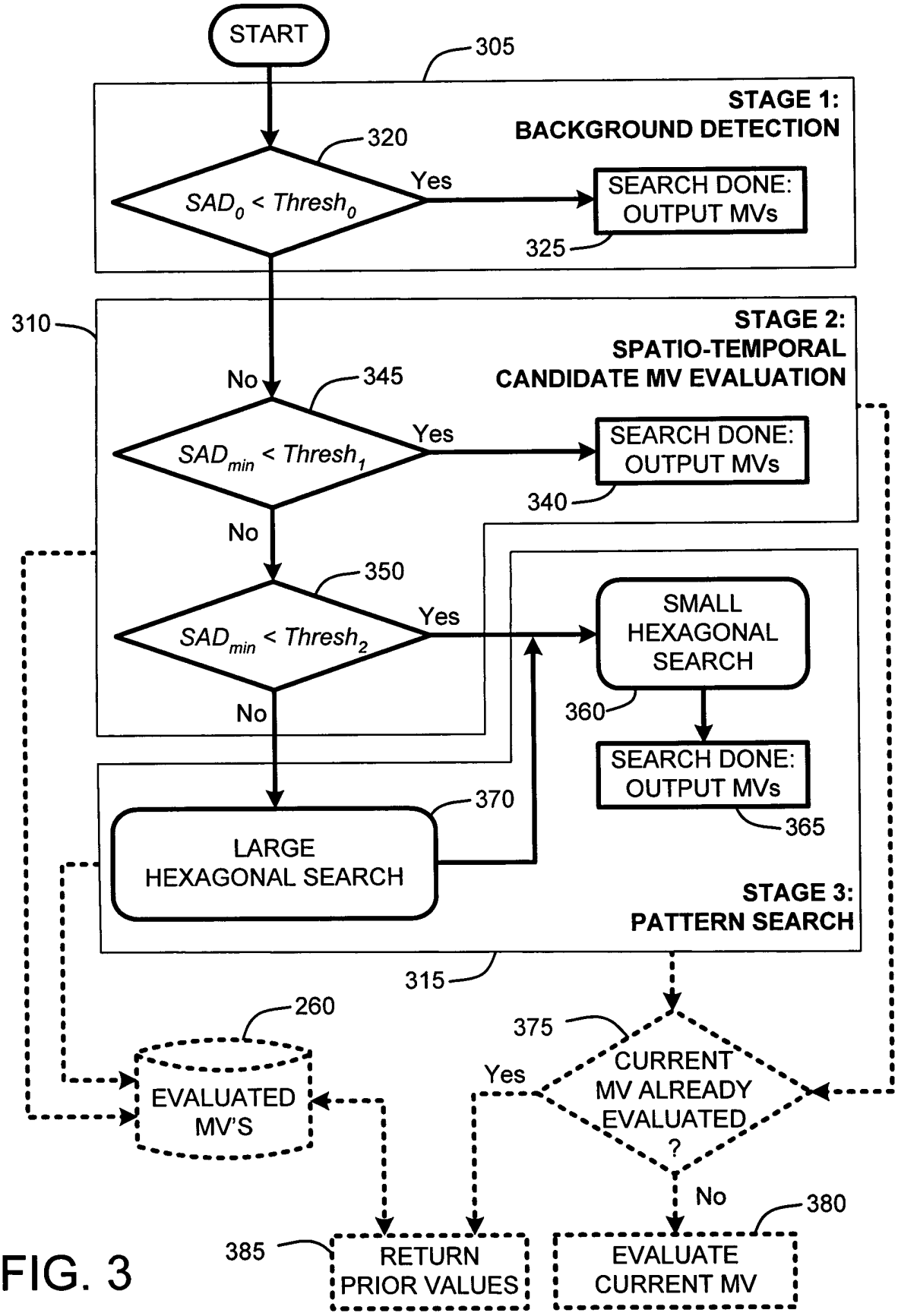
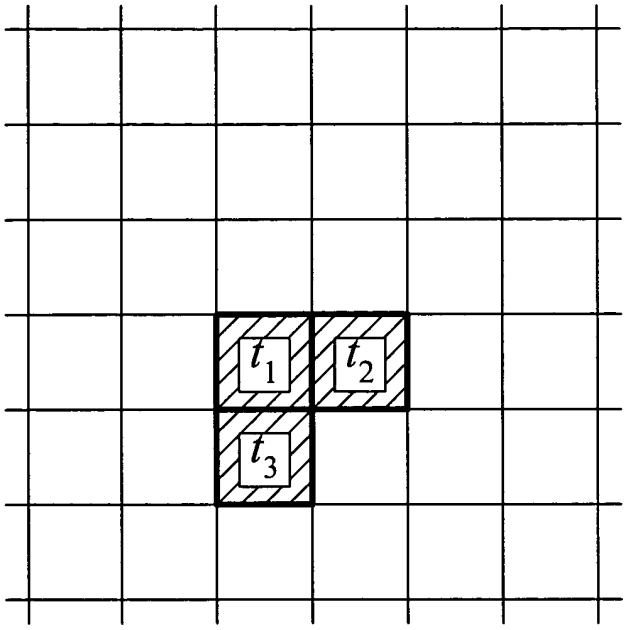
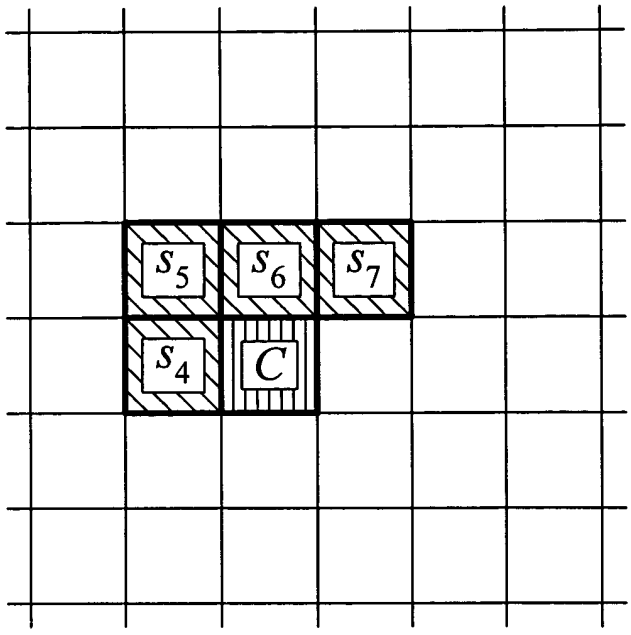

START
305
STAGE 1:
BACKGROUND DETECTION
320
$SAD_0 < Thresh_0$
Yes
SEARCH DONE:
OUTPUT MVs
325
310
STAGE 2:
SPATIO-TEMPORAL
CANDIDATE MV EVALUATION
No
345
$SAD_{min} < Thresh_1$
Yes
SEARCH DONE:
OUTPUT MVs
340
No
350
$SAD_{min} < Thresh_2$
Yes
SMALL
HEXAGONAL
SEARCH
360
SEARCH DONE:
OUTPUT MVs
365
No
370
LARGE
HEXAGONAL SEARCH
STAGE 3:
PATTERN SEARCH
315
260
EVALUATED
MV'S
375
CURRENT
MV ALREADY
EVALUATED
?
Yes
No
380
385
RETURN
PRIOR VALUES
EVALUATE
CURRENT MV

FIG. 3



THREE TEMPORAL NEIGHBORS IN THE PREDICTION REFERENCE FRAME, *t-1*

FIG. 4A



FOUR SPATIAL NEIGHBORS IN THE CURRENT REFERENCE FRAME, *t*

FIG. 4B

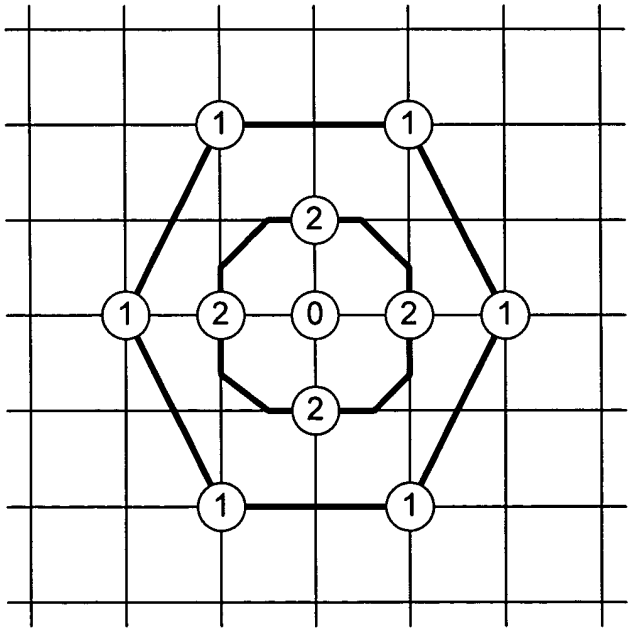


FIG. 5

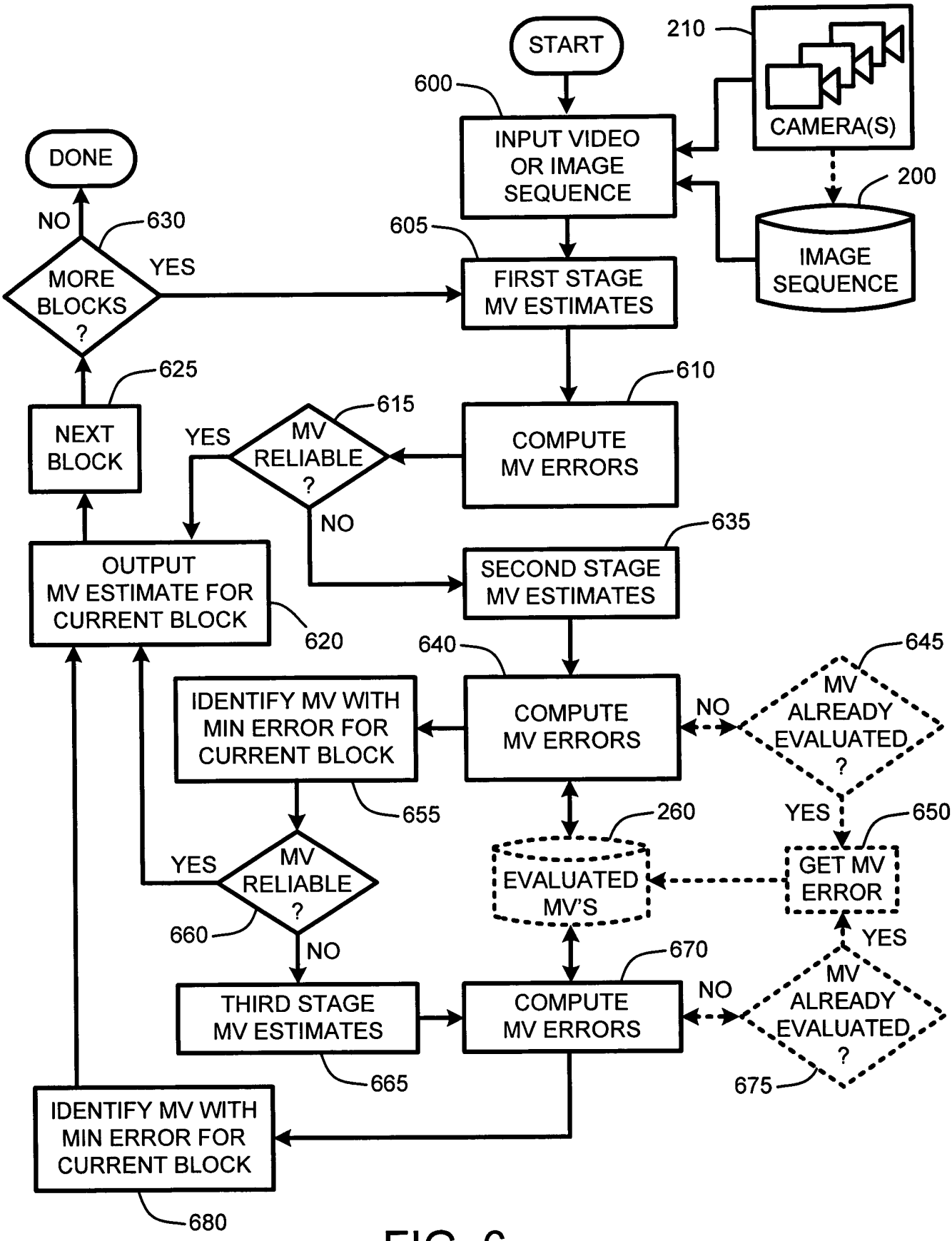

START
210
CAMERA(S)
600
INPUT VIDEO OR IMAGE SEQUENCE
200
IMAGE SEQUENCE
DONE
NO
630
MORE BLOCKS ?
YES
605
FIRST STAGE MV ESTIMATES
625
NEXT BLOCK
610
COMPUTE MV ERRORS
615
YES
MV RELIABLE ?
NO
635
SECOND STAGE MV ESTIMATES
OUTPUT MV ESTIMATE FOR CURRENT BLOCK
620
640
645
IDENTIFY MV WITH MIN ERROR FOR CURRENT BLOCK
COMPUTE MV ERRORS
NO
MV ALREADY EVALUATED ?
655
260
YES
650
YES
MV RELIABLE ?
EVALUATED MV'S
GET MV ERROR
660
NO
YES
670
THIRD STAGE MV ESTIMATES
COMPUTE MV ERRORS
NO
MV ALREADY EVALUATED ?
665
675
IDENTIFY MV WITH MIN ERROR FOR CURRENT BLOCK
680

FIG. 6